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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,431	01/28/2005	Hubert Sjoerd Blaauw	NL 020701	1272
24737 7590 03/18/2009 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510				
EXAMINER LANDRUM, EDWARD F				
ART UNIT		PAPER NUMBER		
3724				
MAIL DATE		DELIVERY MODE		
03/18/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/523,431

Applicant(s)

BLAAUW ET AL.

Examiner

Edward F. Landrum

Art Unit

3724

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/11/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 10-17 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7, 10-17 and 25-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2008 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because Figure 6 does not describe Example 1, on page 5 of the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 4 and 13 are objected to because of the following informalities: Claims 4 and 13 state the original hardness at the center of the diffusion layer is 200HV,

however, like applicant's example 1 there are instances after nitriding and hardening a stainless steel that this will not be the case. Appropriate correction is required.

3. Claims 25-27 are objected to because of the following informalities: Claims 25-27 each state top surface layer is at least 6 times the original hardness at the center of the diffusion layer, however, like applicant's example 1 there are instances after nitriding and hardening a stainless steel that this will not be the case. Appropriate correction is required.

Double Patenting

4. Claims 17 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of copending Application No. 10/522287. Although the conflicting claims are not identical, they are not patentably distinct from each other because the only difference is the material used for the cutting blade. Other portions of claim 17 are intrinsic in the process of plasma nitriding and precipitationally hardening a stainless steel.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-7, 10-17, and 25-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains

subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1, 7, 10, and 17, the phrase "precipitationally hardening the stainless steel with the plasma nitriding", and variants thereof, is new matter because the plasma nitriding does not perform the precipitational hardening as the claims now indicate.

Regarding claims 1, 7, 10, and 17, the term "continuously" used to describe the decreasing hardness of the diffusion layer is new matter. The term was not used to describe the decreasing hardness of the diffusion layer in the originally filed specification. Figures cannot be considered to scale or exact unless originally specified in the specification.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 4-7, 10, 13, 14, 16, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domoto et al (U.S Patent No. 6,354,008), hereinafter Domoto, in view of Oiwa (Japanese Patent No. 60162766), in further view of Rosenhan (U.S Patent No. 5,953,969) and in witness of Liang et al (2001), Blawert et al (1998), Askeland (1994).

Domoto teaches (see Figures 1-3, 6, and 7) an electric shaver with a plurality of steel cutting elements coated on all sides of the blade with a nitride based film having a hardness of at least 1000 HV but possibly extending above 1500 HV. The nitride based film is applied to the cutting blade using a plasma CVD method. The cutting blades of Domoto are capable of working in dry or additive type shavers as both are functional equivalents and would have no bearing to how the cutting blades were made as most electric dry shavers are made to still be cleaned by a cleaning solution or water.

Domoto teaches all of the elements of the current invention as stated above except the steel cutting element being a maraging or precipitation hardening steel, said steel being hardened simultaneously with a precipitation hardening process and with plasma nitriding which forms a top layer of super saturated nitrogen and a diffusion layer adjoining the top layer to the hardness of the steel, and the diffusion layer having an original hardness of the steel cutting blades at the center, preferably 200HV or at least 6 times less hard than the top surface layer, the hardness of the diffusion layer decreasing continuously from the outer surfaces of the lemella.

Oiwa teaches (see included translated Constitution) that it is old and well known to apply a nitride layer to a steel electric shaver blade by means of plasma nitriding.

Rosenhan teaches (Col.1, lines 15-23) that while CVD processes for applying strengthening layers to a tool is an option material deposited on the tool can tear or chip off when the material is used. Furthermore, Rosenhan teaches (Col. 2, lines 19-55) a maraging steel is a good steel for a plasma diffusion process and that a plasma diffusion process includes simultaneously heating the material by precipitation

hardening and combining the heating of the material with a plasma diffusion process. The hardness of the diffusion layer changes continuously between the two outer layers (Col. 2, lines 34-37). This method creates a tool that wears about 10 times less than other known tools.

It would have been obvious to have modified Domoto to incorporate the teachings of Oiwa and Rosenhan to use maraging steel for the cutting blades of the electric shaver and simultaneously apply the nitride layer to the cutting blades of the electric shaver by means of a plasma nitride process that included precipitation hardening the cutting blades. Maraging steel is a steel that can be easily nitrized and resists wear and crack propagation. Plasma nitriding the maraging steel cutting members would make the cutting blades of the electric shaver wear 10 times less than other known tools thereby prolonging the life of the cutting blades.

Domoto does not explicitly state that the electric shaver is a dry shaver but it is inherent that the electric shaver of Domoto is a dry shaver as there is no mention of a lubricant or other liquid used with the shaver.

Regarding claims 1, 7, and 10, claiming the top layer being a uniform hardness, the diffusion layer continuously decreasing in hardness, and the minimum hardness of the diffusion layer being found at the center of the diffusion layer, each of these limitations is intrinsic in the process of plasma nitriding a precipitationally hardened steel. To support this, the examiner has provided three references that teach these facts. Liang et al (2001) teaches (Pg. 6, Col. 1, Paragraph 2) that plasma nitriding a surface makes that surface have a top layer consisting of supersaturated nitrogen.

Blawert et al (1998) teaches (Pg. 2, Col. 1, lines 2-5) teaches that plasma nitriding a surface causes a top layer to be formed along with a diffusion layer between the top layer and the material being nitrided. Askeland (1994) teaches (see Figures 5 and 6, the A and B characters have been added by the examiner to the upper Figure because the reproduction was made in black and white) that a diffusion layer is a continuous changing layer formed between the two materials where the two materials exchange atoms. Each edge of the diffusion layer takes properties that abut the edge of the diffusion layer as more of that abutment materials atoms are found there compared to the other material found on the opposite edge of the diffusion layer. Therefore, the minimum hardness of the diffusion layer would be in the center of the two compounds abutting the diffusion layer if both were relatively the same hardness. The non uniform structure created by the combining of atoms of the different compounds would be at its greatest in the center because neither compound would have a large majority of atoms present. Figures 5 and 6 of Askeland clearly show this point.

Regarding claims 4, 13, and 25-27, and the diffusion layer either being 200HV at the center or the top surface layer being at least six times harder than the center of the diffusion layer, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the center of the diffusion layer 200HV or the hardness of the top surface layer at least 6 times harder than the center of the diffusion layer because discovering the optimum or workable hardness of the center of the diffusion layer would have been a mere design consideration based on the type of steel a manufacturer wanted to use. Such a modification would have involved only routine skill

in the art to accommodate the steel type requirement. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges only involves routine skill in the art.

9. Claims 2, 3, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device of Domoto in view of Yamada et al (U.S Patent No. 5,857,260), hereinafter Yamada.

The modified device of Domoto teaches all of the elements of the current invention as stated above except the thickness of the top layer being in the range of 5 μm to 25 μm , and the thickness of the diffusion layer being in the range of 5 μm to 20 μm .

Yamada teaches that the optimal total thickness of hardness layers covering a blade is between 2 μm and 15 μm (Col. 1, lines 66-67; Col. 2, lines 1-5).

It would have been an obvious to have modified the modified device of Domoto to incorporate the teachings of Yamada to make the total thickness of the top layer and the diffusion layer 2 μm to 15 μm to provide for the best cutting conditions for both the outer and inner cutting blades.

Furthermore, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the thickness of the top layer between 5 μm to 25 μm and the thickness of the diffusion layer between 5 μm to 20 μm because discovering the optimum or workable ranges for the thickness of the top layer and the diffusion layer would have been a mere design consideration based on the material properties of both the cutting blade and the nitride based top layer. Such a modification would have

involved only routine skill in the art to accommodate the properties of the cutting blade and the nitride based top layer. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device of Domoto, as stated in section 8, in view of Gerasimov et al (U.S. Patent No. 6,584,691), hereinafter Gerasimov.

The modified device of Domoto teaches all of the elements of the current invention as stated above except the electric shaver being an additive type shaver.

Gerasimov teaches (see Figure 39) providing a solid soap additive 116 to an electric shaver for the purpose of improving lubricity as well as condition a user's skin or beard.

It would have been obvious to have modified the device the modified device of Domoto to incorporate the teachings of Gerasimov to provide an additive on the shaver. Doing so would improve lubricity of the shaver as well as condition a user's skin or beard during shaving.

11. Claims 17 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device and method of Domoto, as stated in section 8, in view of Cole et al (U.S. Patent No. 4,259,126), hereinafter Cole.

The modified device and method of Domoto teaches all of the elements of the current invention as stated above except the steel cutting element being austenitic steel

Cole teaches (see Col. 1) teaches that it is old and well known in the razor art to make cutting blades out of austenitic steel.

It would have been obvious to have modified the modified the modified device and method of Domoto to incorporate the teachings of Cole to use austenitic steel for the cutting blades of the electric shaver and apply the nitride layer to the cutting blades of the electric shaver by means of a plasma nitride process. The physical properties of austenitic steel resist wear and crack propagation, and therefore are ideal for cutting blades intended to be used frequently.

Response to Arguments

12. Applicant's arguments filed 2/11/2009 have been fully considered but they are not persuasive.

Examiner acknowledges the first two NPL rows for the IDS filed 8/17/2005 were intended to cite a single reference. The IDS objection has been withdrawn.

Regarding Rosenhan, Figure 2 shows that the hardness of the intermediate (diffusion) layer changes continuously between the hardness of the outer layer 67-68 HRC to the hardness of the core steel (54-58). Because of the intrinsic properties associated with plasma nitriding, if the hardness of the core steel had been the same as the hardness of the plasma nitrided outer layer the center of the diffusion layer would have been the least hard as discussed above.

Applicant has failed to argue examiner's assertion that claimed subject matter is intrinsic. Furthermore, applicant has added additional subject matter that is also considered intrinsic to the process of plasma nitriding a hardened steel. Applicant

employs and old and well known method of plasma nitriding (Page 5, line 17), and it does not appear that anything beyond claiming plasma nitriding a steel that has been precipitationally hardened would be not intrinsic. Applicant is invited to provide an affidavit that scientifically and mathematically shows that the claimed subject matter is not intrinsic based on the process used and the article receiving the process.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sanderson (U.S Patent No. 3,743,551) teaches elements of the current invention.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 3724

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward F. Landrum whose telephone number is 571-272-5567. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on 571-272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. F. L./
Examiner, Art Unit 3724
3/15/2009

/Boyer D. Ashley/
Supervisory Patent Examiner, Art Unit 3724